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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KARIKARI, KWASI	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/665,939	SADRI ET AL.	
	Examiner	Art Unit	
	KWASI KARIKARI	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed on 06/20/2008 with respect to claims 1-5 and 7-34 in the remarks, have been considered but are moot in view of the new ground(s) of rejection necessitated by the new limitations added to claims 1,9,17,21,25 and 31. See the rejection below of claims 1, 9,17,21, 25 and 31 for relevant citations found in Kadous, Davidsson and He, disclosing the newly added limitations.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1,4, 6,8, 9,11,12,14,16,17,20,21,24,25,27,29,31 and 34 are rejected under U.S.C. 102(e) as being anticipated by Kadous et. al., (U.S 20030095508 A1), (hereinafter Kadous).

Regarding claims 1, 9 and 25, Kadous discloses the method/article/apparatus (see Figs. 1A & 3), comprising:

quantizing a channel response function (= determine suitable rate for data transmission; and transmitted modulated signal is received, conditioned, and digitized to provide data samples frequency response, see Pars. 0024-26 and 0032) of a signal received from a transmitter (transmitter 110, see Fig. 1A); or a residual value of the channel response function, wherein a channel estimate is subtracted from the channel response function to provide the residual value; and

generating a channel state information packet (= status of each received packet, see Pars. 0025-26) to be transmitted back to the transmitter wherein the packet includes, the quantized channel response function when the packet is first feedback packet sent to the transmitter or a first feedback packet after a channel interruption (= feedback information to be sent back to the transmitter 110; and rate that may be used; and feedback information may include channel estimates provided by the channel estimator 164, see Pars. 0021-27, 0094 and 0112), and includes the quantized residual value of the channel response function (= 0027-33, 0036 and 0042-43), and

wherein the channel state information permits the transmitter to obtain a channel state estimation (= channel estimator 164 processes OFDM symbols to provide estimates of one or more characteristics of the communication channel, see Par. 0025).

Regarding claims 3,11 and 27, as recited in claims 1, 9 and 25, Kadous discloses that the method further comprising converting the signal from a frequency domain representation of the signal to a time domain representation of the signal prior to said quantizing (see Par. 0024).

Regarding claims 4 and 12, as recited in claims 1 and 9, Kadous discloses that the method further comprising converting the signal from at least one of a frequency domain representation or a time domain representation to power allocation and modulation type instructions prior to said quantizing (see Par. 0026-27).

Regarding claims14 and 29, as recited in claims 9 and 25, Kadous discloses wherein the channel state information packet includes the quantized channel response function when at least one of the channel state information packet is a first feedback packet (see 0025-27), or there is an interruption in the connection.

Regarding claims 8 and 16, as recited in claims 1 and 9, Kadous discloses that method, wherein said quantizing includes estimating a time delay attenuation of the channel response function (see Pars. 0023 and 0101-2).

Regarding claims 17, 21 and 31, Kadous discloses the method/article, comprising: parsing a channel state information packet received from a device (receiver 150) after transmitting a signal to the device to obtain a quantized channel response function of the signal wherein the channel state information packet includes, the quantized channel response function when the packet is first feedback packet sent to the transmitter or a first feedback packet after a channel interruption (= feedback information to be sent back to the transmitter 110; and rate that may be used; and feedback information may include channel estimates provided by the channel estimator 164, see Pars. 0021-27)

and includes a quantized residual value of the channel response function otherwise, wherein a channel estimate is subtracted from the channel response function to provide the residual value (= channel estimates, see [0027, 0094 and 0112]) and

dequantizing the quantized channel response function to provide a channel response function (see Pars. 0025-27).

Regarding claims 20, 24 and 34, as recited in claims 17, 21 and 31, Kadous discloses that the method, further comprising, where the channel response function is a time domain representation, converting the time domain representation of the channel response function to a frequency domain representation of the channel response function (see Par. 0025).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2,5,10,13,18,22,26,28 and 32 are rejected under U.S.C. 103(a) as being unpatentable over Kadous in view of Davidsson et al., (U.S 20020101840 A1), (hereinafter Davidsson).

Regarding claims 2 and 10, as recited in claims 1 and 9, Kadous fails specifically to disclose that the method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M.

However, Davidsson the method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M (see Pars. 0010-17).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

Regarding claims 5, 13 and 28, as recited in claims 1,9 and 25 Kadous fails specifically to discloses that the method/apparatus further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M, wherein the N complex numbers are limited to values having time delays less than a predetermined delay spread

However, Davidsson the method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M, wherein the N complex numbers are limited to values having time delays less than a predetermined delay spread (see Pars. 0010-17 and 0054-63)

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

Regarding claim 18, as recited in claim 17, Kadous fails specifically to disclose that the method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M.

However, Davidsson the method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M (see Pars. 0010-17).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

Regarding claims 22 and 32, as recited in claims 21 and 31, Kadous fails specifically to disclose that an article/apparatus further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M.

However, Davidsson the method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M (see Pars. 0010-17).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

Regarding claim 26 , as recited in claim 25, Kadous fails specifically to disclose that an article/apparatus further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M.

However, Davidsson the method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M (see Pars. 0010-17).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

4. **Claims 7,15,19,23, 30 and 33 are rejected under U.S.C. 103(a) as being unpatentable over Kadous in view of He et al., (U.S 20040005010 A1), (hereinafter He).**

Regarding claims 7,15 and 30, as recited in claims 1,9 and 25, Kadous fails to disclose that the method, wherein said calculating includes subtracting a channel estimate from the channel response function to provide a residual value of the channel response function.

However, He teaches the method, wherein where said calculating includes subtracting a channel estimate from the channel response function to provide a residual value of the channel response function (see Pars. 0032-39).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of He with the system of Kim for the benefit of achieving a system

that includes equalizer for accurately determining the frequency offset between transmitter and the receiver (see He; Par. 0064).

Regarding claims 19, 23 and 33, as recited in claims 17, 21 and 31, Kadous fails to disclose that the method/article, further comprising, calculating an updated estimate of the channel response function by adding a current estimate of the channel response function to the residual of the channel response function when the channel response function of the channel state information packet is represented as a residual of the channel response function.

However, He teaches, calculating an updated estimate of the channel response function by adding a current estimate of the channel response function to the residual of the channel response function when the channel response function of the channel state information packet is represented as a residual of the channel response function (see Pars. 0032-39).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of He with the system of Kim for the benefit of achieving a system that includes equalizer for accurately determining the frequency offset between transmitter and the receiver (see He; Par. 0064).

CONCLUSION

Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although

the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. SEE MPEP 2141.02 [R-5] VI. PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS: A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). >See also MPEP §2123.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

33the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwasi Karikari whose telephone number is 571-272-8566. The examiner can normally be reached on M-T (9am - 7pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8566.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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